AY 2008–2009

Daniel K. Dugger

Curriculum Vita

Work Address
Department of Mathematics
University of Oregon
Eugene, OR 97403

Phone/Computer
Work: (541) 346-4790
Home: (541) 338-3085
email: ddugger@math.uoregon.edu
web: math.uoregon.edu/∼ddugger

Research Interests: Algebraic topology, K-theory, commutative algebra.

Employment

University of Oregon — September 2002 to present.
Associate Professor: September 2007–present.
Assistant Professor: September 2004–June 2007.
Paul Olum Visiting Assistant Professor: September 2002–June 2004.

Purdue University — Research Assistant Professor, August 1999 to May 2002.

Education

Massachusetts Institute of Technology — September 1994 to May 1999.
PhD in Mathematics, May 1999.
Thesis title: A Postnikov Tower for Algebraic K-theory.
Thesis supervisor: Michael J. Hopkins.

University of Michigan — September 1990 to August 1994.
B.A. in Mathematics, August 1994.

Grants

National Science Foundation Grant No. DMS-0604354, awarded July 1, 2006.
Three-year renewable grant, approximately $90,057 total.

Publications

A curious example of two model categories and some associated differential graded algebras, with B. Shipley, 27 pages. To appear in Alg. Geom. Top.

Large annihilators in Cayley-Dickson algebras II, joint with D. Biss, J. D. Christensen, and D. Isaksen. 22 pages. To appear in Bolletin Mexican Math. Soc.

Étale homotopy and sums-of-squares formulas, joint with D. Isaksen. Math. Proc. Cambridge Philos. Soc. **145** (2008), 1–25.

Large annihilators in Cayley-Dickson algebras, joint with D. Biss and D. Isaksen. Comm. Algebra **36** (2008), no. 2, 632–664.

Enriched model categories and an application to additive endomorphism spectra with B. Shipley. Theory and Appl. of Categories **18** (2007), 400–439.

Topological equivalences for differential graded algebras, joint with B. Shipley. 25 pages. Advances in Math. **212**, no. 1 (2007), 37–61.

The Hopf condition for bilinear forms over an arbitrary field, joint with D. Isaksen. Annals Math **165**, no. 3 (2007), 943–964.

Postnikov extensions of ring spectra, joint with B. Shipley, 2006. 45 pages. Algebr. Geom. Topol. **6** (2006), 1785–1829.

Spectral enrichments of model categories, Homology Homotopy Appl. **8** (2006), no. 1, 1–30.

Algebraic K-theory and sums-of-squares formulas, joint with D. Isaksen, Documenta Math. **10** (2005), 357–366.

Motivic cell structures, joint with D. Isaksen, Algebr. Geom. Topol. **5** (2005), 615–652.

An Atiyah-Hirzebruch spectral sequence for KR-theory, K-theory **35** (2005), 213–256.

K-theory and derived equivalences, joint with B. Shipley, Duke Math. J. **124** (2004), no. 3, 587–617.

Hypercovers and simplicial presheaves, joint with S. Hollander and D. Isaksen, Math. Proc. Cambridge Philos. Soc. 136 (2004), no. 1, 9–51

Topological hypercovers and A^1-realizations, joint with D. Isaksen, Math. Zeit. **246** (2004), no. 4, 667–689.

Weak equivalences of simplicial presheaves, joint with D. Isaksen. Homotopy theory: relations with algebraic geometry, group cohomology, and algebraic K-theory, 97–113, Contemp. Math., 346, Amer. Math. Soc., Providence, RI, 2004.

Combinatorial model categories have presentations, Adv. Math. **164** (2001), 177–201.

Universal homotopy theories, Adv. Math. **164** (2001), 144–176.

Replacing model categories by simplicial ones, Trans. Amer. Math. Soc., vol. **353** (2001), no. 12, 5003–5027.

Betti numbers of almost complete intersections, Illinois. J. Math. **44** (2000), no. 3, 531–541.

Preprints

The motivic Adams spectral sequence, joint with D. Isaksen, 2008.

Classification spaces of maps in model categories, 2006. 10 pages.

(Preprints available at http://math.uoregon.edu/∼ddugger).

Expository papers

Notes on the Milnor conjectures, 2004. 30 pages.

Multiplicative structures on homotopy spectral sequences I, II, 2003. 49 pages.

Notes on Delta-Generated spaces, 2003. 4 pages.

The Zariski and Nisnevich decent theorems, 2001. 7 pages.

The Polar form of the gradient, 1999. 7 pages.

Teaching experience

PhD Students:
William Kronholm, PhD completed in Spring 2008. Currently a visiting assistant professor at Swarthmore.
Jennifer Burman, Fall 2006–present.
Elizabeth Henning, Fall 2007–present.

Other Students:
Greta Swanson, undergraduate Honors thesis, 2005–06. "Exploring the dynamics of the Julia set."
Donald Acker, undergraduate Honors thesis, 2007–08. "Universal covers of compact, connected 2-manifolds."

Courses taught at University of Oregon:

Multivariable Calculus I—fall 2008.

Topics in algebraic topology (WETSK)—winter 2008.

Discrete dynamical systems—spring 2008.

K-theory—winter 2008.

Linear Algebra II—winter 2008.

Linear Algebra I—fall 2007.

Introduction to differential equations—spring 2007.

Probability and Statistics for Business—spring 2007.

Undergraduate topology—fall 2006, winter 2007.

Business Calculus I—fall 2007.

Graduate Algebraic Topology—fall 2005, winter 2006, spring 2006.

Calculus I—fall 2005.

Discrete Dynamical Systems—spring 2005.

Business calculus II—spring 2005.

Multivariable calculus II—spring 2005.

Multivariable calculus I—winter 2005.

Dynamical Systems—spring 2004.

Linear Algebra II—spring 2004.

Linear Algebra I—winter 2004.

Homological Algebra—fall 2003.

Multivariable calculus II—spring 2003.

Multivariable calculus I—winter 2003.

Linear algebra II—winter 2003.

Linear algebra I—fall 2002.

Courses taught at Purdue University:

Geometry (for Secondary School Teachers)—spring 2002.

Ordinary Differential Equations—spring 2000, 2002.

Introduction to Linear Algebra—fall 1999, 2000, and 2001.

Introduction to Discrete Mathematics—fall 2000, 2001.

Honors Multi-Variable Calculus—spring 2000.

Business Calculus—spring 2001.

Courses taught at Massachusetts Institute of Technology:

Lecturer for Mathematical Methods for Engineers—August 1998.

Recitation Instructor for Complex Analysis—spring 1998.

Recitation Instructor for Multivariable Calculus—fall 1997.

Mentor for the Research Science Institute—summer 1996.

Instructor for M.I.T.'s Experimental Studies Group (teaching multivariable calculus)—fall 1995.

Awards

Williams Fellowship, University of Oregon, 2007–2008.

Alfred P. Sloan Dissertation Fellowship, held at M.I.T. September 1998 to May 1999.

National Science Foundation Graduate Fellowship, held at M.I.T. Sept. 1994 to Aug. 1997.

Invited addresses (conferences)

"Motivic weights in the classical Adams spectral sequence", combined PIMS–AMS Sectional meeting, Vancouver, fall 2008.

"Quadratic structures in motivic homotopy theory." Midwest Topology Seminar, Winter 2007, University of Illinois at Chicago.

"Motivic homotopy theory." Topics in Homotopy Theory Graduate Summer School, PIMS & University of Calgary, August 2005.

"Composition formulas for quadratic forms in characteristic p." Special session on homotopy theory at the AMS Regional Meeting in Boulder, CO, October 2003.

"Motivic cell decompositions." Cascade Topology Seminar, Spring 2003, Portland State University.

"Voevodsky theory (Homotopy Theory of Schemes)" (3 lectures). Minimal Varieties in Geometry and Physics (A Conference on the Occasion of Blaine Lawson's 60th Birthday), June 2002, SUNY at Stony Brook.

"Topological equivalences for DGAs." Special session on algebraic topology at the AMS Regional Meeting in Ann Arbor, MI, Spring 2002.

"Equivariant cycles and KR-theory." Midwest Topology Seminar, Spring 2001, Univerity of Illinois at Chicago.

"Universal homotopy theories, with applications." Ontario Topology Seminar, Fall 2000, University of Western Ontario.

"Betti numbers of almost complete intersections." Special session on commutative algebra at the American Mathematical Society annual meeting, San Francisco, CA, January 1995.

Selected seminar talks

"Motivic Stiefel-Whitney classes." Topology seminar, MIT, July 30, 2008.

"Motivic stable homotopy groups." Topology seminar, MIT, September 17, 2007.

"Motivic characteristic classes." Summer topology seminar, Stanford, August 2007.

"Sums-of-squares formulas and motivic homotopy theory." Colloquium, University of Illinois at Chicago, February 23, 2007.

"The Milnor conjecture". Topology seminar, Wayne State University, April 18, 2006.

"Motivic cohomology for everyone". Colloquium, Wayne State University, April 17, 2006.

"Characteristic classes for quadratic bundles". University of Chicago, September 2004.

"Topological methods in characteristic p algebra." MIT, September 2003.

"Topological equivalences for DGAs." University of Washington, April 2003.

"Homotopy endomorphism spectra and DGAs." University of Chicago, December 2002.

"Motivic cohomology for the masses." Colloquium, University of Oregon, February 2002.

"Hypercovers and simplicial presheaves." MIT, Fall 2001.

"Computing the motivic Steenrod algebra." University of Notre Dame, Spring 2001.

"A motivic spectral sequence for Atiyah's KR-theory." University of Illinois at Urbana-Champaign, Spring 2000.

"An introduction to motivic topology", Instituto Superior Técnico (Lisbon), June 2000.

"Some connections between K-theory and motivic cohomology." Texas A&M University, October 1999.

"Adventure and romance in the homotopy theory of schemes." M.I.T. Summer Topology Seminar, 1997.

"Cohomology of finite group schemes over a field, after Friedlander and Suslin." M.I.T. Summer Topology Seminar, 1996

Departmental Service

2008–2009: Executive Committee, Graduate appointments, Teaching Effectiveness, Library Committee. Also presently serving on the University's Faculty and Promotion Committee.

2007–2008: Executive Committee, Tenure-track Search Committee, Graduate Affairs Committee.

2006–07: Colloquium Committee, Postdoctoral Search Committee, Graduate Affairs Committee.

2005–06: Undergraduate Affairs Committee, Executive Committee, Graduate Appointments Committee. IntroDucktion advisor, Summer 2005.

2004–05: Undergraduate Affairs Commitee. IntroDucktion advisor, Summer 2004. Web-site committee. OIMT afternoon activities committee, Spring 2005.

Other Service

Have refereed 20+ papers for Advances in Math., Trans. Amer. Math. Soc., K-theory, Doc. Math., Jour. Pure Appl. Alg., Compositio Math., Math. Zeit., Geom. Topol., Canad. J. Math., and Homology Homotopy Appl.

Organized, with H. Sadofsky, the Special Session on Applications of Algebraic Topology at the AMS Regional Meeting in Eugene, OR, November 2005.

Organized, with B. Shipley, the Special Session on Homotopy Theory at the AMS Regional Meeting in Boulder, CO, October 2003.